

# A Review of Trends in Research Methods in Cooperative Education

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In 1997, when Bartkus and Stull analysed the cooperative education (co-op) literature they described it as sketchy, limited, and uncertain, with a focus on best practice. Bartkus, Stull, and Higgs conducted two further assessments of the co-op research, where Bartkus and Higgs (2011) described the literature as being stronger and more developed than when the assessment was conducted in 2004 (Bartkus & Stull, 2004). A significant indication of this development can be observed by the growth in the number, and change in type, of publications in *Asia Pacific Journal Cooperative Education (APJCE)* (Zegwaard, 2012).

Coll and Chapman (2000) found that the co-op research mostly used numerical methods and Coll and Chapman encouraged the use of different research approaches (a view also expressed by Eames & Cates, 2011), such as mixed methodologies that combining quantitative and qualitative research methods.

When Coll and Kalnins (2009) conducted their review of 141 qualitative research articles in cooperative education from a range of journals, they noted that interpretive (qualitative) research was well-established in the cooperative education literature and a wide range of interpretive co-op research articles were available. Most qualitative studies tended to use interviews as the main data collection tool.

The work in this paper presented here is a preliminary analyses of research articles published in APJCE. The intent was to see if the call by Coll and Chapman (2000) for greater use of qualitative research methods has been fulfilled. The work also reported on some research trends that have developed over recent years.

## METHODS

Articles from 2000 to 2013 published in APJCE were reviewed using document analysis and systematic evaluation approach (Bowen, 2009; Bryman & Bell, 2011). Each article was classified as either research, topical, or best practice. The articles classified as research were then analysed to identify: methodology type or research approach, data collection method, and method of analysis. The terminology used within the research article was used in the analysis, where possible. When the methods were not articulated explicitly in the article, the analysers then determined research approach. Multi-staged data collection approaches were common in research articles, which were recorded during the analyses. In total, 118 research articles were identified and analysed in this research.

## RESULTS

The analyses showed an annual increase in the number of research articles published in the APJCE. Over the same time it was evident that the use of qualitative research approaches and multi staged data collection methods also increased.

### *Growth in number of research articles*

The number of articles published per year in APJCE increased (see also Zegwaard, 2012). To best demonstrate the growth, and change in type of publication, a comparison of Volumes 1-3 (2000-2003) with Volume 14 (2013; the last complete year included in this analysis) was undertaken (see Table 1). These two sample sets are of similar

size (21 and 23 articles, respectively). The two sample sets indicate a significant shift in recent times towards research publications (in 2000-2003, 43% were research articles compared with 74% in 2013). The 2000-2003 sample set also contained predominantly showcase or conceptual type articles.

TABLE 1: Analyses of research approaches used in research articles in 2000-2002 and 2013.

	2000-2002	2013
Total number of articles	21	23
Number (%) of research articles	9 (43%)	17 (74%)
Number (%) of quantitative	7 (33%)	4 (17%)
Number (%) of qualitative	2 (9%)	7 (30%)
Number (%) of mixed methods	0 (0%)	5 (22%)
Document analysis only	0 (0%)	1 (4%)

#### *Use of qualitative approaches*

There also was an increase in the number of articles for all (broad) types of research methods (Table 1). From 2000 to 2013, the number of articles using qualitative research methods increased from two (9%) to seven (30%). There was also an increase in articles using mixed methods (however, this expression was not often used by the authors). Mixed methods first became evident in APJCE in 2005 and has subsequently increased.

From 2000 to 2013, 30% did not state the research method; most of which were in the early years and mostly were quantitatively-based research articles. However, in recent years the description of methods has become more detailed and specific. A range of terms was used to describe research methods in qualitative research articles, such as, interpretative qualitative; exploratory qualitative, mixed method qualitative, naturalistic enquiry, case study, collective case study, auto-ethnography, and case study interpretivist-constructivist. Some described the research method as a longitudinal study or a cross-sectional analysis. What was also common was a tendency to (incorrectly) use the terms 'methods' and 'methodology' interchangeably, however, this is not unique to co-op research.

#### *Methods and research approaches*

Sixty-three percent of articles collected data over several stages (multi-staged data collection). About a quarter had two stages, however, 22% used three stages or more. Multi-staged data collection tended to be pre- and post-intervention evaluations. Some research approaches used data collected from different sources allowing for triangulation, such as interviews, document analysis, evaluations, and academic performance data.

A particularly common mixed method approach involved interview data supported by other data collection, for example, survey data. Open-ended survey questions (which provides qualitative data) was common in surveys. As many as 40% of research articles used either rating scales (e.g., Likert) or rankings. Some articles used focus groups, telephone interviews, participant observations, and action research. A few articles used rather specific terminology to describe the research method, for example, 'unstructured in-depth phenomenological interviews' (Groenewald, 2003) and 'learning curve grids' for student self-describing their depth of experience during work placements (Fleming & Eames, 2005).

Numerical approaches to research tended to rely on frequency counts, percentages, and descriptive statistics (e.g., means, standard deviations or standard error, significance of differences). There were examples of sophisticated statistical analysis techniques, such as, factor analysis, correlation and regressions, Cronbach Alpha tests for internal reliability, and the more comprehensive ANOVA and MANOVA statistical tests.

Qualitative analysis description varied widely, reflective of the wide range of data collections methods available. Commonly used terms in the articles included content analysis, thematic analytical approach, thematic analysis, theme identification, coding with assembling and triangulating, themes identification, and tabulation of results.

## DISCUSSION

The strengthening and maturing of the co-op literature is reflected by the greater research activity and subsequent published research articles over the past 20 years. The preliminary review reported here shows an increase in the number (and proportion) of qualitative research articles published in APJCE, suggesting the call made by Coll and Chapman (2000) has been at least partially answered. Most research articles used mixed methods, combining the strengths of both qualitative and quantitative research approaches.

The process of analysing of the research articles highlighted the difficulty of labelling research as either qualitative or quantitative. Many studies used mixed methods, such as the reliance of quantitative survey instruments supported with qualitative open ended questions or qualitative data collection methods such as interview supported by other forms of quantitative data derived from, for example, surveys or numerical coding of student reports. Interestingly, despite many research articles using mixed methods, very few explicitly described the research approach as mixed methods.

The wide range of combinations of research approaches, including multi-staged research projects, was vast. It demonstrates that researchers are willing to consider multiple research approaches in the attempt to understand the complexity of educational issues at hand. The range of research combinations may also indicate the different disciplinary contexts the researchers were undertaking the research work and perhaps also the range of educational backgrounds of co-op researchers.

It is not surprising that the use of telephone interviews was reported. In the context of co-op, where participants are likely to be geographically distributed, the use of telephones (or even online methods such as Skype) presents some obvious advantages. It is likely safe to assume that the use of telephones, or online interactions, as part of the data collection occurs more often than what is reported.

It was interesting to observe that some qualitative research approaches reported in APJCE included some not identified by Coll and Chapman (2000). The use of work performance evaluation, student assessment items, study guides, cross-sectional or longitudinal studies were not mentioned by Coll and Chapman, however, are shown to be effectively used by co-op researchers.

## CONCLUSION

Research approaches reported in research articles published in APJCE has shown a considerable shift over the 13 years towards a greater use of qualitative research methods. An increase in the number of reported research projects using mixed methods is also evident. It was intended that this paper reported on preliminary findings which would shed light on some research methods trends and inform other researchers on the commonality of these approaches. Further review is required to fully understand other trends in the type of use of research methods and also to explore any trends in publishing patterns.

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